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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,216	09/18/2003	Hideo Sano	3796.P0042US	8302
23474 7590 12/26/2007 FLYNN THIEL BOUTELL & TANIS, P.C. 2026 RAMBLING ROAD KALAMAZOO, MI 49008-1631			EXAMINER MORILLO, JANELLE COMBS	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 12/26/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/666,216	Applicant(s) SANO ET AL.	
	Examiner Janelle Combs-Morillo	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'353 in view of JP2002-317255 (JP'255) or JP2001-205329A (JP'329).

JP'353 teaches a process of extruding an aluminum alloy, with alloying ranges of Si, Mg, Cu, and Mn that substantially overlaps the alloy composition in instant claims 1 and 4 as well as equations 1-4 (see Table below, JP'353 at abstract). JP'353 obtains an extrusion fiber texture and teaches that the existence of transition metals Mn, Cr, Zr, etc. homogeneously deposited in the extrusion ingot inhibit recrystallization, and therefore provide an unrecrystallized fiber texture (see translation, p 3). JP'353 mentions in the examples that the recrystallized layer of the extruded material is 0.1% of the thickness (translation, p 7), which substantially overlaps the presently claimed area% of fibrous structure. JP'353 further teaches homogenizing prior to

	Si		Mg		Cu		equation 1		equation 2		equation 3		equation 4	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max
JP'353	0.1	1.5	0.2	2	1.5	6	1.8	9.5	0.17	2.55	0.3	3.5	0.75	3.6

extrusion at temperatures near 500 °C and cooling at a rate $\geq 200^{\circ}\text{C/hr}$ down to 200 °C or less, extruding at 500 °C and a ratio of ≥ 10 (translation p 1), and solution heat treating after extruding by heating to 495-510°C, and artificially aging at 160-180°C for 2-8 hr (translation p 5) to obtain

a T6 temper (translation p 6). JP'353 does not teach the apparatus limitations of said method claims. However, the prior art of JP'255 (drawn extrusion of similar 6xxx alloys) teaches substantially similar extrusion apparatus parameters, including a thickness (T) of the product billet #32 of 50-100mm [0018-0019]. Concerning the bearing length of a solid die (cl. 1, 7), the bearing length L approximately equals the thickness T in the diagrams of JP'255. However, it is not clear that said drawings are drawn to a particular scale. Even so, given the disclosure of JP'255, it would have been obvious to one of ordinary skill in the art to select a suitable bearing length L, suitable to provide an extruded material with a thickness T with satisfactory strength and no cracking (see JP'255 at abstract). Further, the final thickness of the billet #32 (see Fig. 3, final extruded size) is held to be a result effective variable wherein the expected results is increased deformation.

Alternatively, JP'329 (also drawn extrusion of similar 6xxx alloys) teaches substantially similar extrusion apparatus parameters, including a thickness (T) of the product 1.4-2.5mm (Table 2), and a bearing length of a solid die $L=H_b=1.5-4.0$ (see [0005], Table 1) (see diagrams).

It would have been obvious to one of ordinary skill in the art to use the apparatus taught by JP'255 or JP'329 when extruding the alloys taught by JP'353 because JP'255 teaches a product with no cracking and excellent strength can be obtained (abstract), or because JP'329 teaches a product without defects and complicated shape can be obtained (abstract).

3. Claims 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'353 in view of JP2002-317255 (JP'255).

JP'353 and JP'255 are discussed in paragraphs above. JP'353 does not teach the apparatus limitations of said method claims. However, the prior art of JP'255 teaches a flow

guide is used during said extrusion, and is placed at the front of the solid die (#23, see Fig. 2). JP'225 also teaches an inner circumferential surface is separated from an outer circumferential surface with the bearing of the solid die at a distance of $A \geq 20$ mm (abstract, see also Figures), which is close to the instant amended limitation of A 9-15mm. JP'225 teaches the thickness of the flow guide 23 is $B=5-25\%$ of the outer diameter of the flow guide (which is substantially equal to the thickness of the billet, see Fig. 2).

Concerning claim 6, though JP'353 mentions the extrusion of a round bar (translation p 6), and does not specify a hollow section, because JP'353 teaches said alloy has good extrusion properties, it held to be within the disclosure of JP'353 to extrude said Al-Cu-Mg-Si-Mn alloy into a variety of configurations including hollow and solid sections.

Concerning claim 5, JP'353 teaches substantially the same process steps of homogenizing, cooling, extruding, solution heating, and aging (see above discussion). Though JP'353 does not specify the cooling rate after solution heating, JP'353 does mention a T6 peak-strength temper is formed, wherein a fast quenching step after solution heating must take place to provide dispersoid elements in a super-saturated state prior to aging. Therefore, it is held to be within the disclosure of JP'353 to fast quench at rates $\geq 10\text{C/s}$, substantially as presently claimed.

It would have been obvious to one of ordinary skill in the art to use the apparatus taught by JP'225 when extruding the alloys taught by JP'353 because JP'225 teaches a product with no cracking and excellent strength can be obtained (abstract).

Response to Amendment/Arguments

4. In the response filed on October 22, 2007 applicant added new claim 7. Claims 1, 2, 4-7 are currently pending. The examiner agrees that no new matter has been added.

5. Applicant's argument that the present invention is allowable over the prior art of record because the prior art's drawings are drawn to scale has not been found clearly persuasive.

Concerning the bearing length of a solid die (cl. 1, 7), the bearing length L approximately equals the thickness T in the diagrams of JP'255. However, the examiner agrees that it is not clear that said drawings are drawn to a particular scale. Even so, given the disclosure of JP'255, it would have been obvious to one of ordinary skill in the art to select a suitable bearing length L, suitable to provide an extruded material with a thickness T with satisfactory strength and no cracking (see JP'255 at abstract), such as a bearing length within $L \leq 5T$ or $L \leq 3T$. Further, the final thickness of the billet #32 (see Fig. 3, final extruded size) is held to be a result effective variable wherein the expected results is increased deformation.

6. Applicant's argument that the present invention is allowable over the prior art of record because the prior art does not teach or suggest the distance between inner circumferential surface to outer circumferential surface has not been found persuasive. The apparatus taught by the prior art is capable of performing a functionally equivalent process. More particularly, the prior art teaches a structure that functions in a substantially identical way and in a approximate degree (see MPEP 2183).

7. The declaration under 37 CFR 1.132 filed October 22, 2007 is insufficient to overcome the rejection of claims 1, 2, 4-6 based upon JP'353 in view of JP'255 or JP'329 as set forth in the last Office action because: firstly, evidence of criticality in separation of inner circumferential

surface of the guide hole to the outer circumferential surface is applicable to only claim 2 (which mentions this feature). Secondly, closest prior art of JP'225 teaches a distance $A \geq 20$ mm (abstract, Figures, see discussion above), which is held to be close to the instant maximum of 15mm. Declarant has shown that A is proportional to the area ratio of fiber structure (Table 2 of declaration filed 10/22/2007- increasing A from 4 to 17mm increases %fiber structure from 54% to 92%), however, with respect to high amounts of A, declarant states that a distance A of 17 mm is inferior when performing a process of continuous extrusion- as air is captured where billets are joined which leads to a increase in inferior parts and decrease of yield rate. However, the instant claims are not drawn to a process continuous extrusion. Therefore, the inferiority of the upper limit of A is not clear, and criticality has not been established, fully commensurate in scope with the instant claims.

8. Applicant's argument that the present invention is allowable over the prior art of record because JP'353 does not disclose the apparatus limitations required in the inventive method complete with the specific alloy composition falling within the scope of the present claims has not been found persuasive. As stated in the rejection above, JP'353 teaches a process of extruding an aluminum alloy with alloying ranges of Si, Mg, Cu, Mn overlapping the claimed ranges and proportions/equations (cl. 1). JP'353 further teaches a process of extruding to form >60% fiber texture with working and heat treating parameters that fall within the claimed ranges. Though JP'353 does not mention the apparatus limitations, the prior art of JP'225 or JP'329 would have motivated one of skill in the art to have selected the claimed parameters because JP'225 teaches an aluminum alloy can be extruded with no cracking and excellent strength, or

because JP'329 teaches a product without defects and complicated shape can be obtained (see above rejection for full details).

9. Applicant's argument that the present invention is allowable over the prior art of record because alloys of the invention B and F in Table 1 of the present specification are close to alloys 1 and 8 of JP'353, and therefore applicant has established unexpectedly higher tensile and yield strength with respect to the alloys of JP'353 has not been found persuasive. The examiner disagrees that alloys of the invention B and F in Table 1 of the present specification are substantially representative or closer prior art than alloys 1 and 8 of JP'353. Applicant has not compared the instant alloy to the closest prior art of record.

An affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. In *re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979), see also MPEP 716.02(e). "A comparison of the claimed invention with the disclosure of each cited reference to determine the number of claim limitations in common with each reference, bearing in mind the relative importance of particular limitations, will usually yield the closest single prior art reference." In *re Merchant*, 575 F.2d 865, 868, 197 USPQ 785, 787 (CCPA 1978) (emphasis in original). Where the comparison is not identical with the reference disclosure, deviations therefrom should be explained, In *re Finley*, 174 F.2d 130, 81 USPQ 383 (CCPA 1949), and if not explained should be noted and evaluated, and if significant, explanation should be required. In *re Armstrong*, 280 F.2d 132, 126 USPQ 281 (CCPA 1960).

Applicant's argument that the present invention is allowable over the prior art of record because JP'255 does not show the thickness of the product is from 50-100mm has not been found

persuasive. JP'255 teaches final billet #32 can be 50x100mm. Further concerning modifying the final extruded thickness, the final thickness is held to be a result effective variable, wherein the expected results is increased deformation (see rejection above).

10. Applicant's argument that the present invention is allowable over the prior art of record because D is not the same as W_f but $D \geq W_f$ has not been found persuasive. Though D can be $>W_f$, D can also be equivalent to W_f .

11. Applicant's argument that the present invention is allowable over the prior art of record because the secondary reference of JP'329 does not teach the claimed alloy composition has not been found persuasive. The motivation to combine references is stated above; and it is the primary reference of JP'353 that teaches the instant process of extruding an overlapping Al-Cu-Si-Mg-Mn alloy, combined with JP'329 who teaches extrusion apparatus parameters for aluminum alloys. Applicants have not shown unexpected results (i.e. criticality, synergistic effect, etc) of the presently claimed invention (fully commensurate in scope with the instant claims).

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCM

December 14, 2007

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